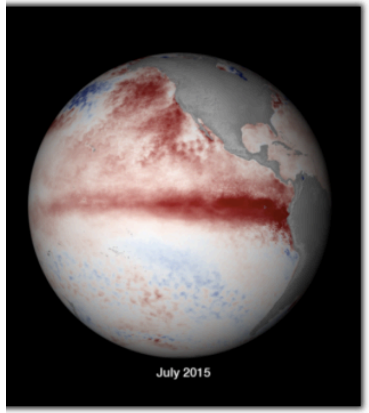
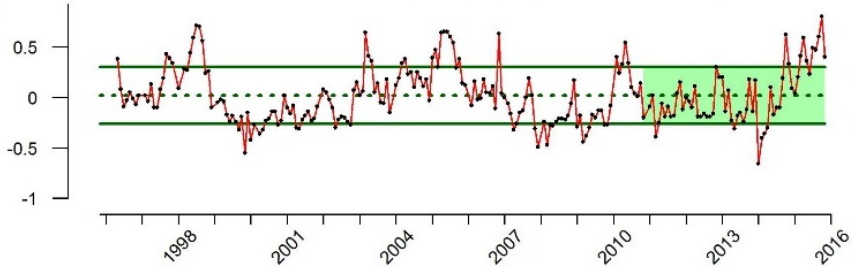
NOAA Fisheries Program Reviews

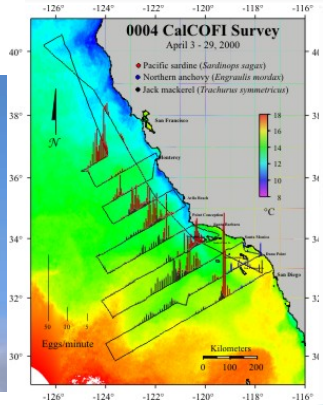
Improving Our Science

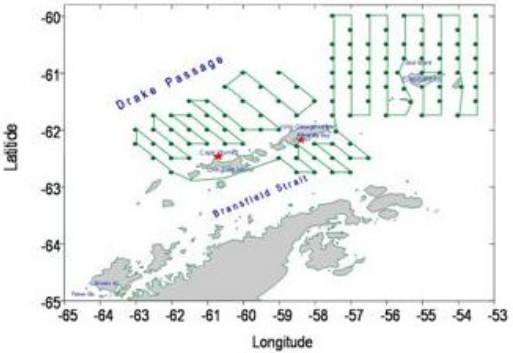
NOAA FISHERIES

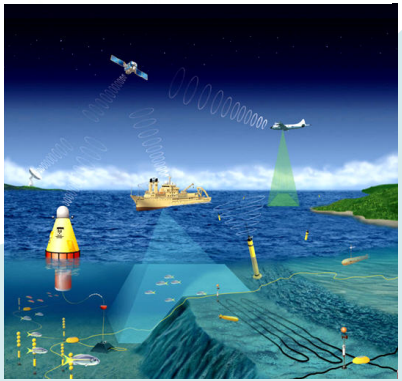
April 2016





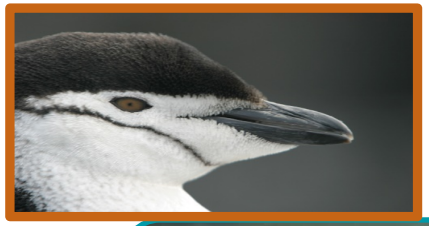






Sound Science is Critical

To Manage our Fisheries & Protected Species





Are we doing the right science?
Are we doing the right science well?

Benefits of Peer Review

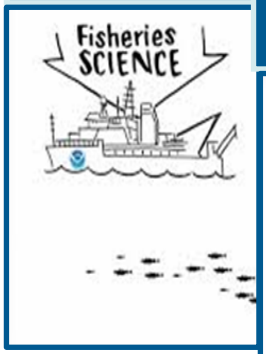
Scientific exchange	Among scientists, industry, the public
Feedback	From independent experts
Standardization	Of scientific methods across NOAA Fisheries
Advancement of science	Through the incorporation of new ideas
Guidance	For future science investments

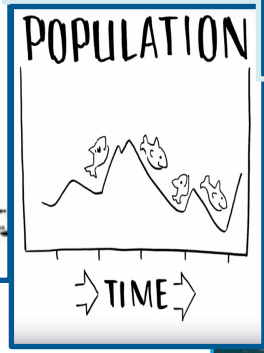
Science Program Reviews

2012 – Strategic Planning

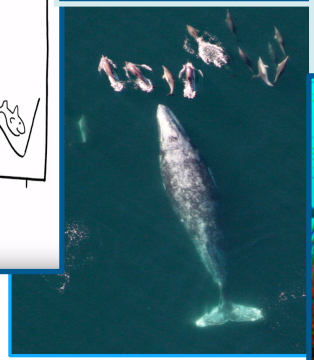
2013 – Data Collection & Management

2014 – Stock Assessment

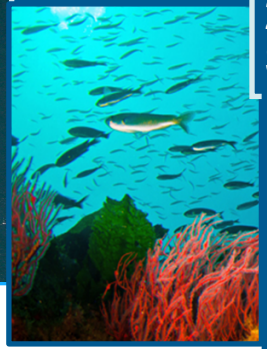




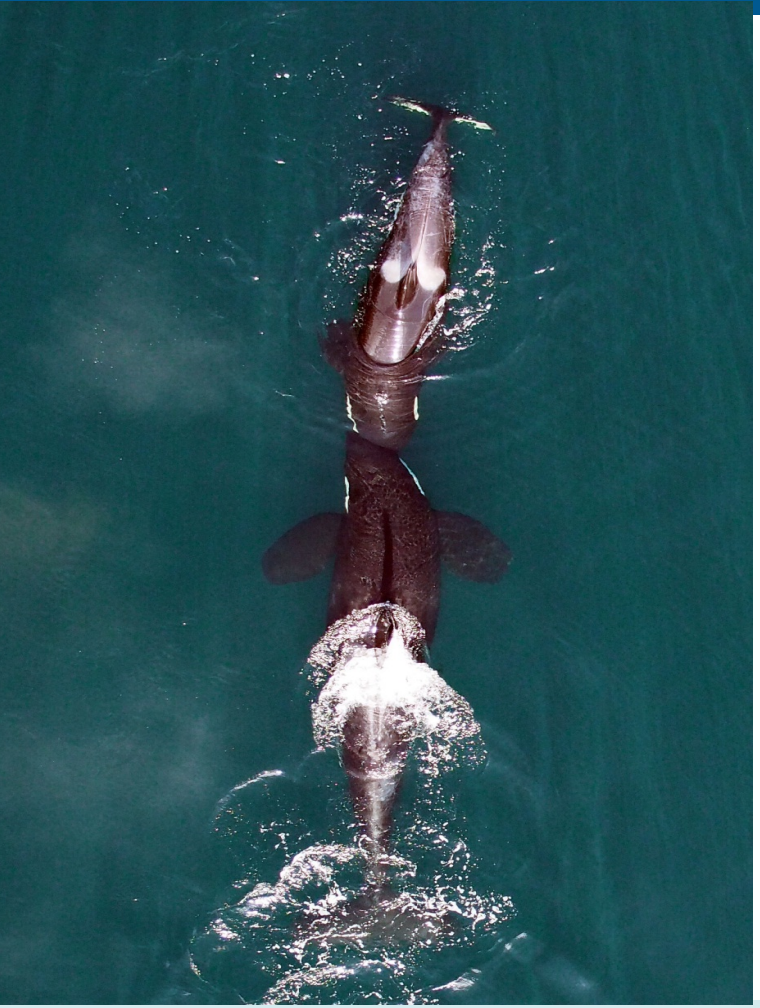
2015 – Protected Species



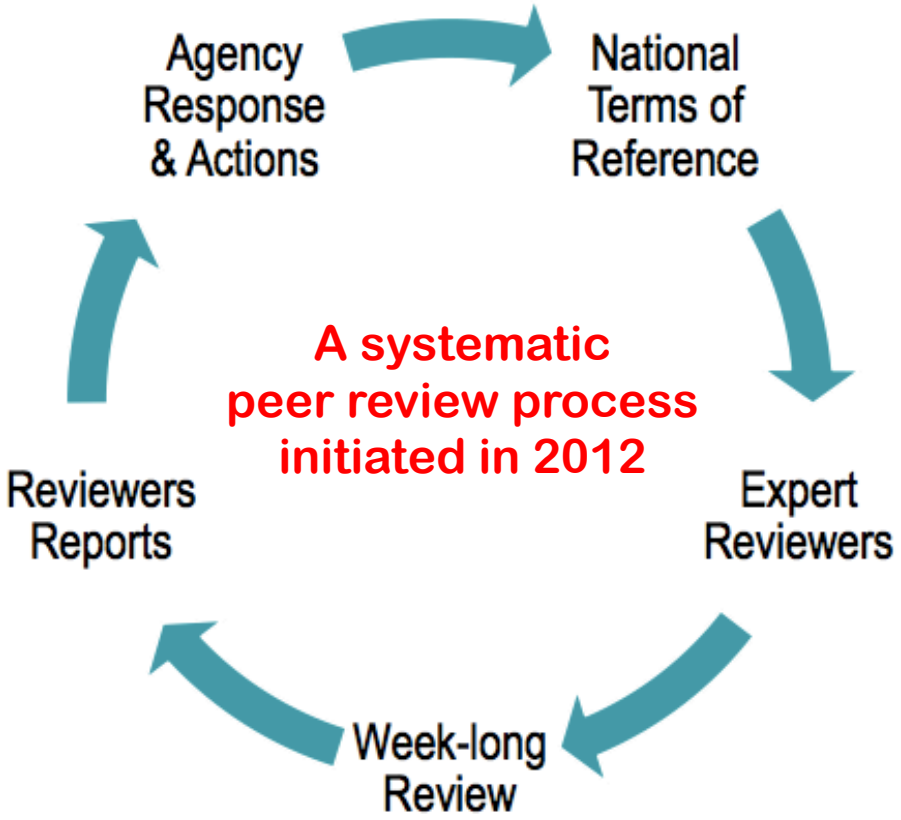
2016 – Ecosystem-Related Science



2017 -Economics & Social Science



Program Review Process



2016 – Ecosystem-Related Science

(Including climate, habitat and protected corals as appropriate)

Schedule:

- SEFSC: Mar 14 – 18 (Miami)
- PIFSC: April 4 – 8 (Honolulu)
- SWFSC: April 18 – 22 (La Jolla)
- AFSC: May 2 – 6 (Juneau)
- NEFSC: June 6 – 10 (Woods Hole)
- NWFSC: July 12 – 14 (Seattle)
- S&T: July 26 – 29 (Silver Spring)

Program review results: http://www.st.nmfs.noaa.gov/science-program-review/

For more information contact Stephanie.Oakes@noaa.gov

A National Perspective on NOAA Fisheries Ecosystem-related Efforts

Cisco Werner

On behalf of
Jason Link
(Senior Scientist for
Ecosystem Management)

SWFSC Ecosystem Science Review
La Jolla, April 18, 2016

Takeaways

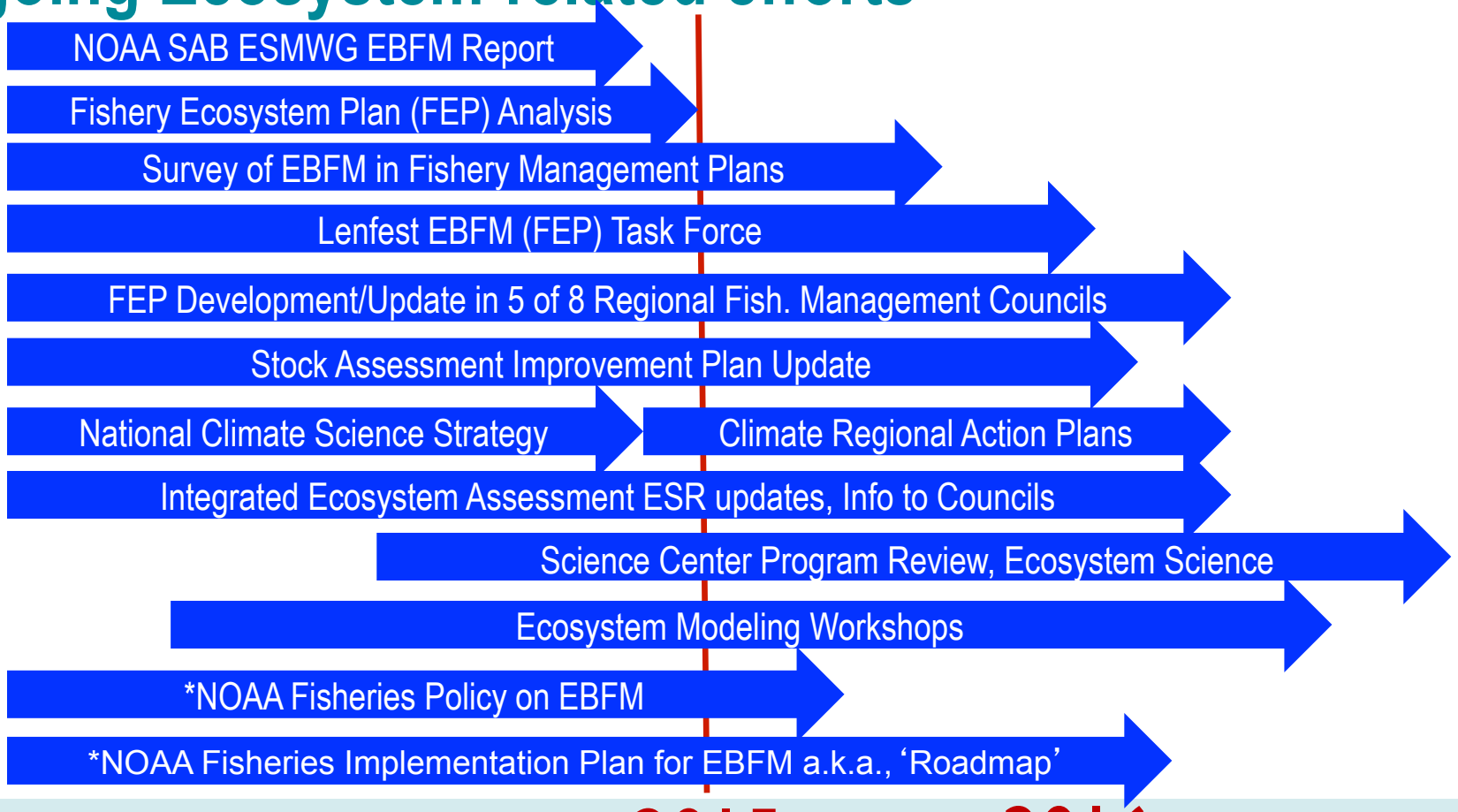
- NOAA Fisheries needs to, can and is committed to doing EBFM
- There are many benefits of doing EBFM
- NOAA Fisheries' aim is to provide a menu of analytical options to address
- Making EBFM operational remains a key challenge, but is one we are up for in partnership with you!

Policy public comment ended Dec 2015

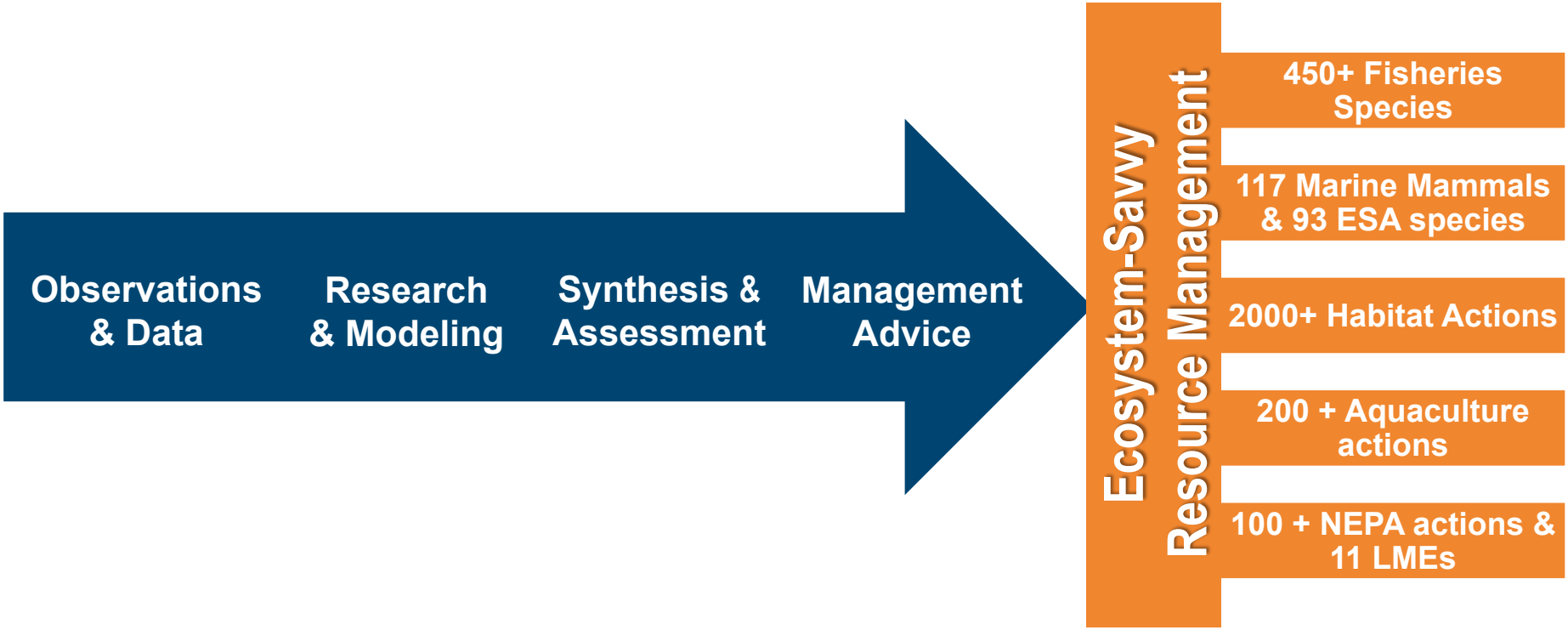
https://www.st.nmfs.noaa.gov/ecosystems/ebfm/creating-an-ebfm-management-policy

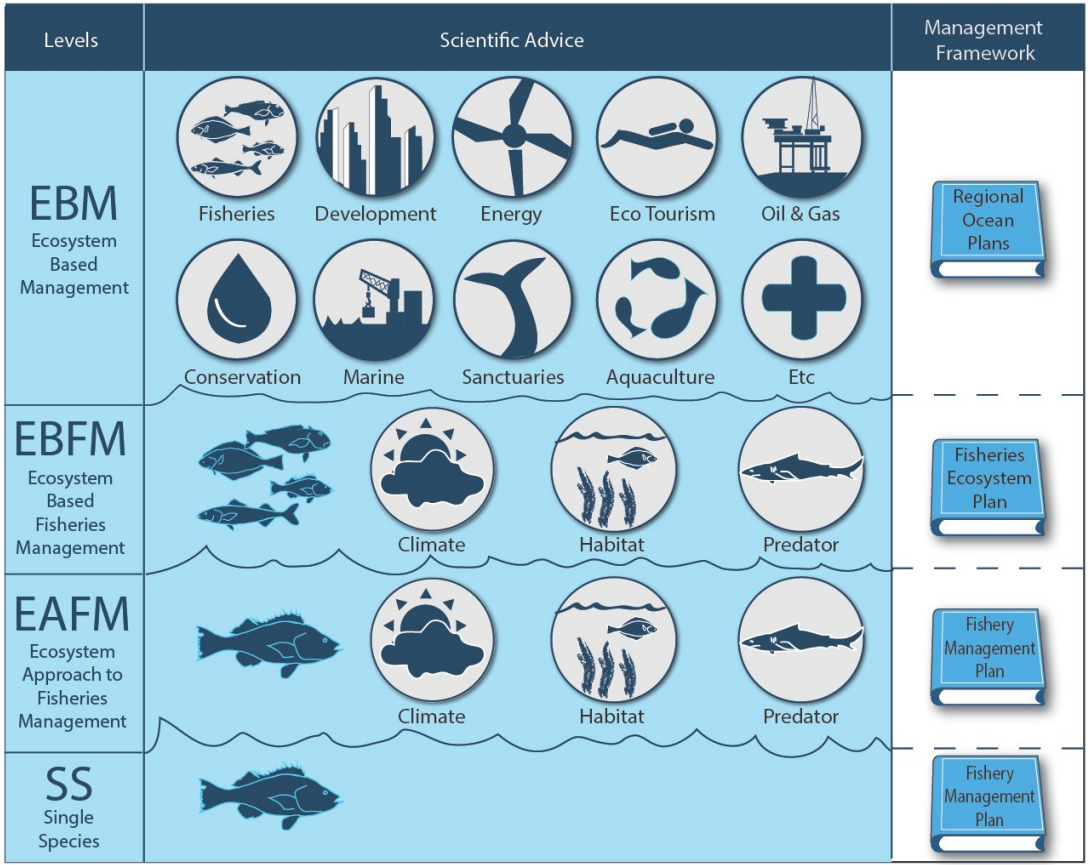
Now working on the **EBFM Roadmap**

Ongoing Ecosystem-related efforts



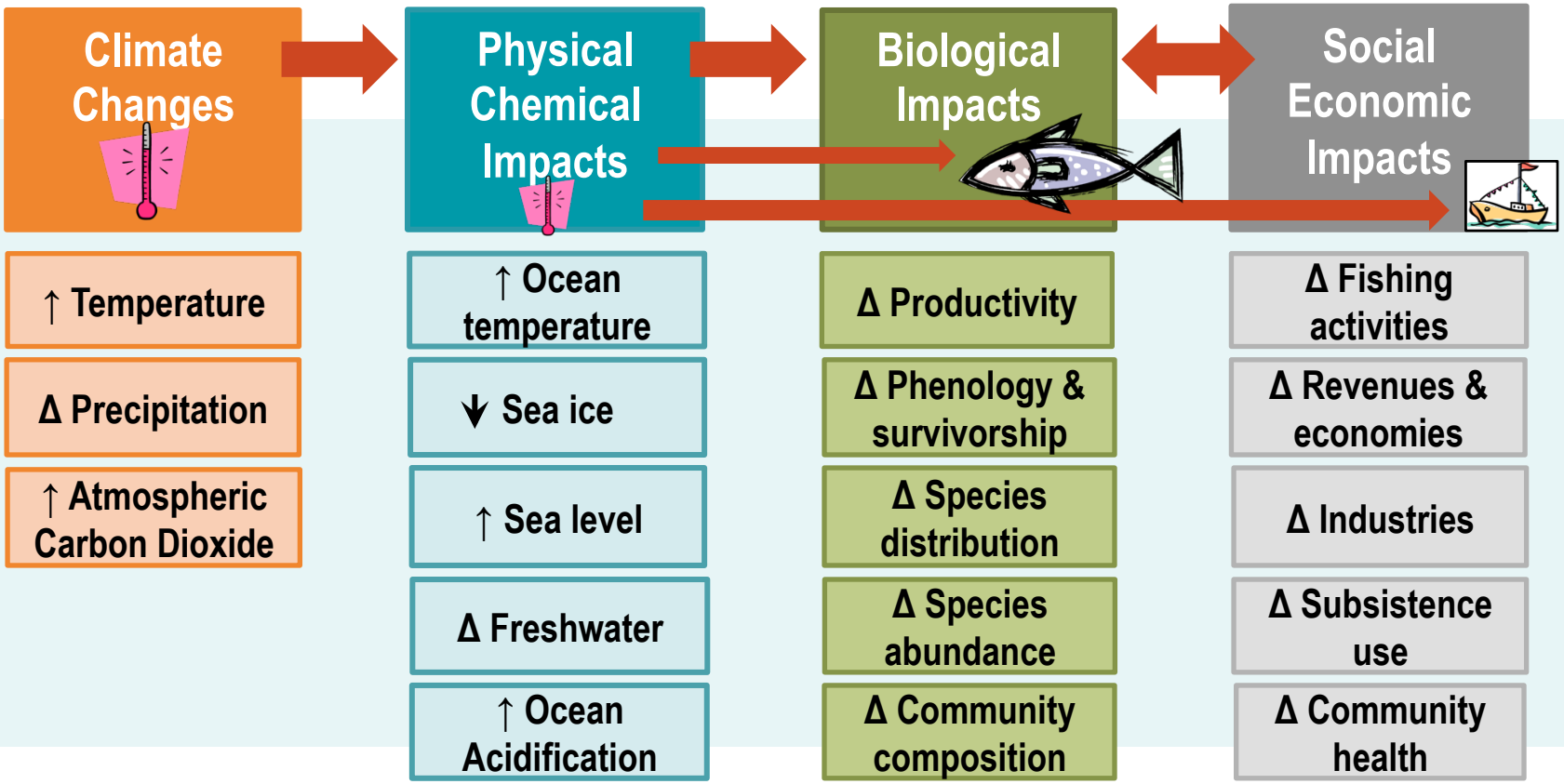
Multiple Mandates, Multiple Opportunities





http://www.st.nmfs.noaa.gov/ecosystems/ebfm/index

CC Impacts Are Expected to Increase



Evolving West Coast Science and Policy

- Maturing California Current Integrated Ecosystem Assessment (CCIEA)
- 4th annual California Current Ecosystem status report to PFMC in March 2016
- Status report's indicators to undergo Council and public review with Fishery Ecosystem Plan initiative process

Why an EBFM Policy Statement?

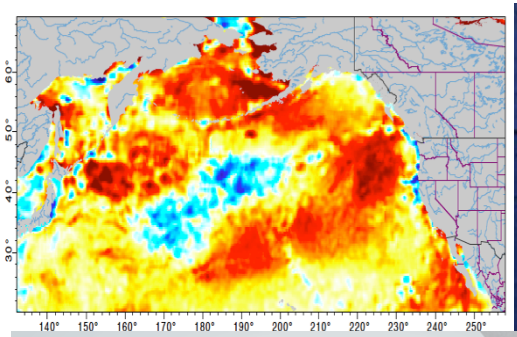
- Clarify, solidify, and document NMFS' commitment to EBFM
- Establish a framework of guiding principles to enhance and accelerate the implementation of EBFM within NMFS

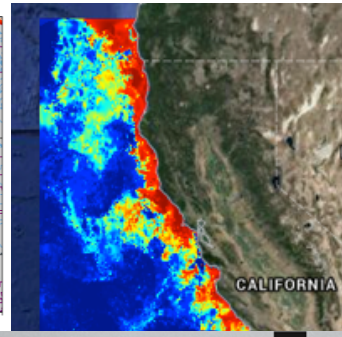
Key Issues:

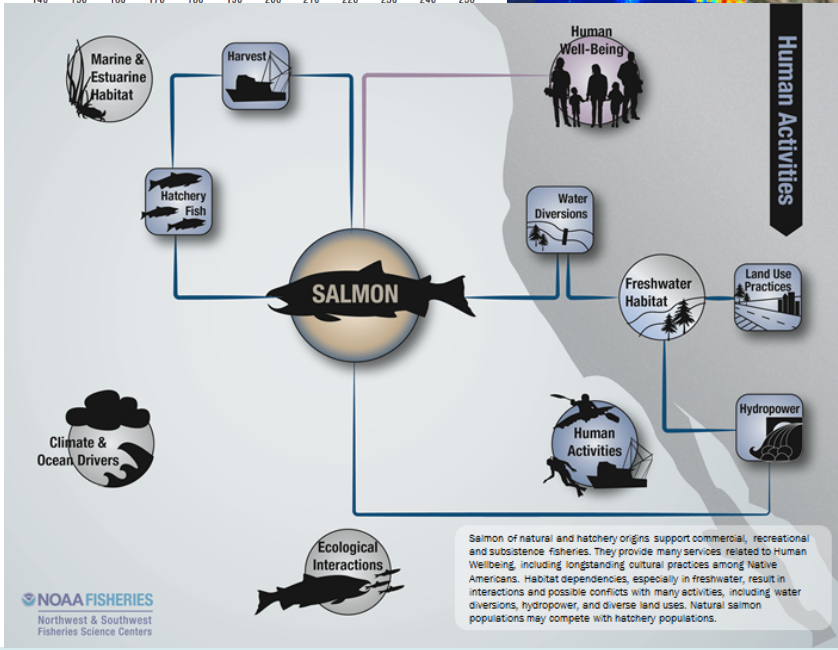
- Relate EBFM to existing legal authorities and requirements for LMR management
- Identify elements of a systematic approach

Evolving West Coast Science and Policy

- El Niño, warm conditions, HABs
- California drought, warming salmon streams, western wildfires
- Short- and long-term effects on fisheries harvest management







EBFM Policy Components

- Policy Statement
- Background
- Purpose of and Need for Policy
- Definition of EBFM
- Context of EBFM
- Benefits
- Guiding Principles
- Legal Authorities and Mandates
- NOAA Fisheries Responsibilities

EBFM Policy Statement

NOAA Fisheries strongly supports the implementation of Ecosystem-Based Fisheries Management (EBFM), to:

- better inform decisions and help achieve and optimize the benefits from marine fisheries,
- by evaluating trade-offs among and between fisheries (commercial, recreational, and subsistence), aquaculture, protected species, biodiversity, and habitats,
- while maintaining resilient and productive ecosystems.

The NMFS Policy Directive Defines EBFM as:

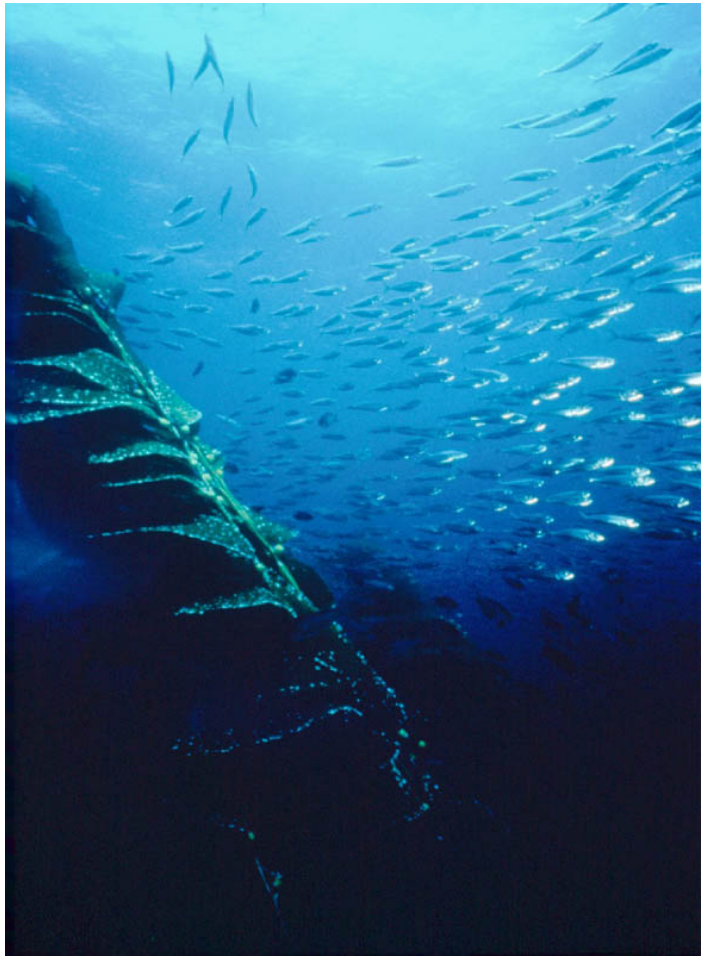
A systematic approach to fisheries management in a geographically specified area that:

- ensures the resilience and sustainability of the ecosystem;
- recognizes the physical, biological, economic, and social interactions among the affected components of the ecosystem, including humans; and
- seeks to optimize benefits among a diverse set of societal goals.

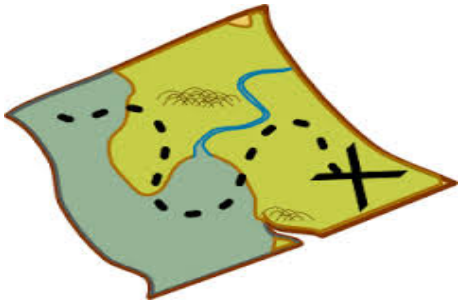
EBFM Guiding Principles

Next Steps for EBFM Policy

- Informal comment closed Dec 2015
- Visited Councils
- Comments from more than 30 organizations and individuals
- Finalize in Spring 2016



Why an EBFM Road Map?



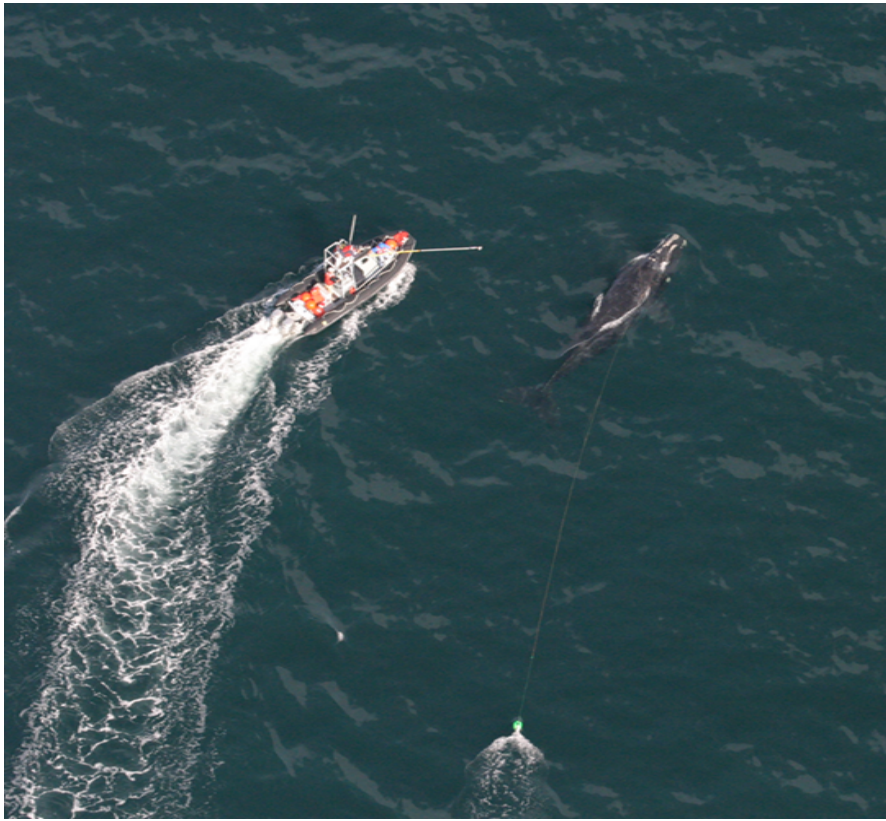
- Guides implementation of the Final EBFM Policy
- Incorporates the menu of options for implementation and benchmarks for NMFS

Key Questions:

- What does successful EBFM look like?
- What do we need for successful implementation of EBFM?
- How do we measure completion and success of EBFM?

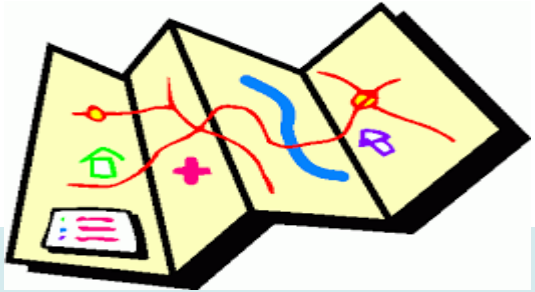
Next Steps for Road Map

- Have a writing group of ~40 individuals
- Will be open for ROs, FSCs review via Regulatory Board, Science Board
- Finalize Draft for public comment in Spring 2016



Summary

- EBFM is needed, and NMFS is committed to doing so
- These efforts will help us meet our mission more effectively
- These efforts are a start to codify what operational EBFM looks like
- We, and our partners, are already doing ~20-30% of the EBFM elements
- Want to maintain a continued dialogue



Questions?

http://www.st.nmfs.noaa.gov/ecosystems/ebfm/creating-an-ebfm-management-policy

NOAA FISHERIES
SWFSC
AFSC

2016 Science Program Review: Ecosystem Science

Southwest Fisheries Science Center
Cisco Werner

Alaska Fisheries Science Center's
U.S. West Coast Pinniped Program
Doug DeMaster

18-22 April 2016

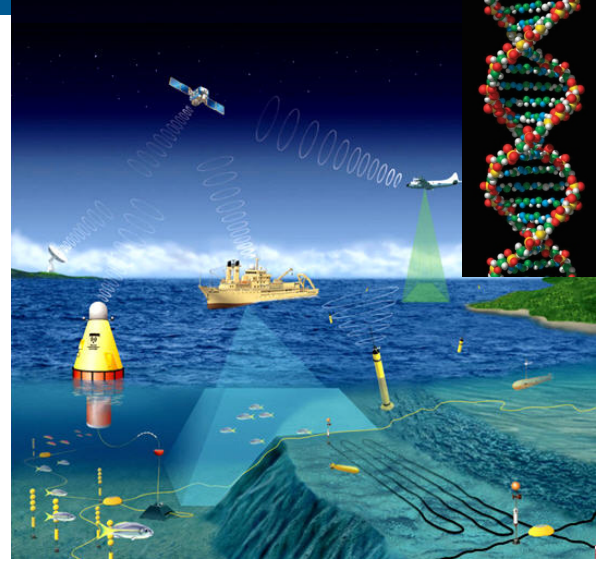
NOAA Fisheries Program Reviews

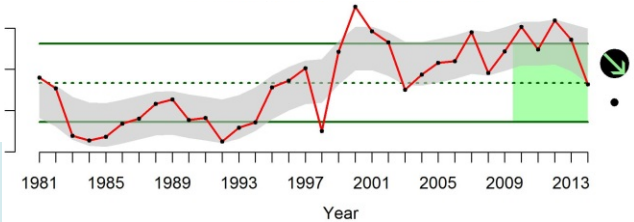
Are we doing good science?

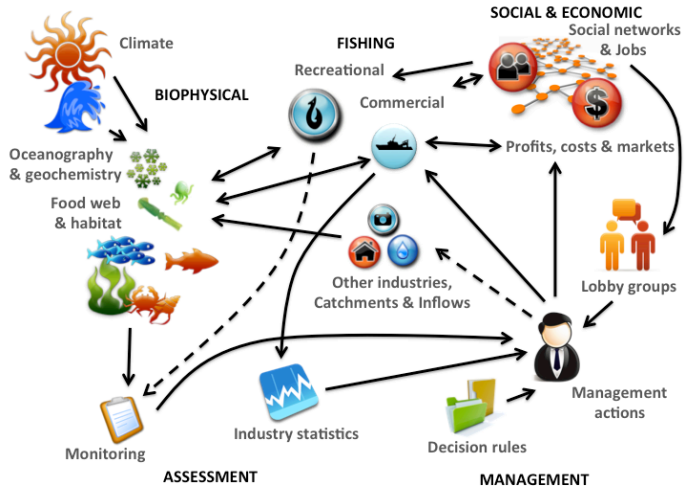
Are we doing the right science?

Why Program Reviews, Why Now?

- Beginning in Jan 2013, NOAA Fisheries is **conducting a systematic review of science** programs by theme
- NMFS' mission includes the stewardship of living marine resources through science-based conservation and management, and the protection and restoration of healthy ecosystems.
- **To ensure NMFS achieves this mission, it is appropriate to conduct periodic reviews of the ecosystem-related (including habitat, oceanographic, climate and ecological) science programs.**







NOAA FISHERIES

Introductions: Review Panel

Robin Webb (Panel Chair), NOAA Earth System Research Laboratory (ESRL)

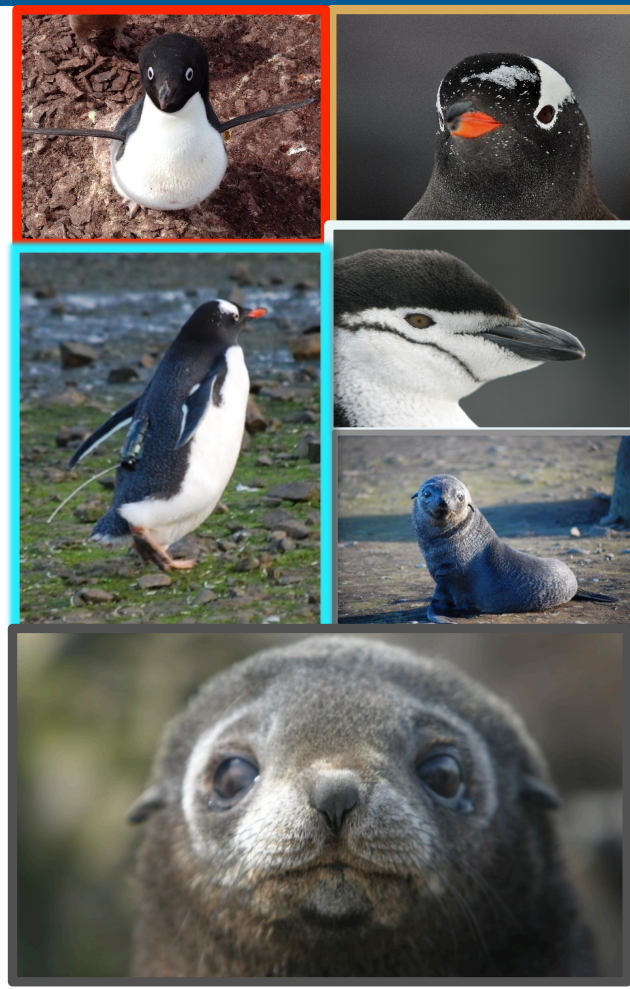
Dan Costa, University of California Santa Cruz

Doug DeMaster, Alaska Fisheries Science Center

Eileen Hofmann, Old Dominion University

Éva Plagányi-Lloyd, Commonwealth Scientific and Industrial Research Organisation (CSIRO)

Jeff Polovina, NOAA Fisheries Pacific Islands Fishery Science Center (PIFSC)



Introductions

Stephanie Oakes and Kenric Osgood
Office of Science and Technology, NOAA NMFS

Jonathan Kelsey
US Dept. of State

Carrie Selberg
Office of Habitat, NOAA NMFS

Will Stelle and Bob Turner
West Coast Regional Office, NOAA NMFS

Kit Dahl
Pacific Fisheries Management Council

Our speakers (SWFSC, AFSC)

Our guests and members of the public

Institutional Structure

NOAA is the National Oceanic and Atmospheric Administration, part of the Department of Commerce

National Marine Fisheries Service (NOAA Fisheries) is one of five NOAA Line Offices - whose mission is to promote sustainable fisheries, the recovery of protected species, and the habitats on which they depend

NOAA Fisheries operates six **Science Centers** nationally; associated with five Regional Offices and eight Fishery Management Councils

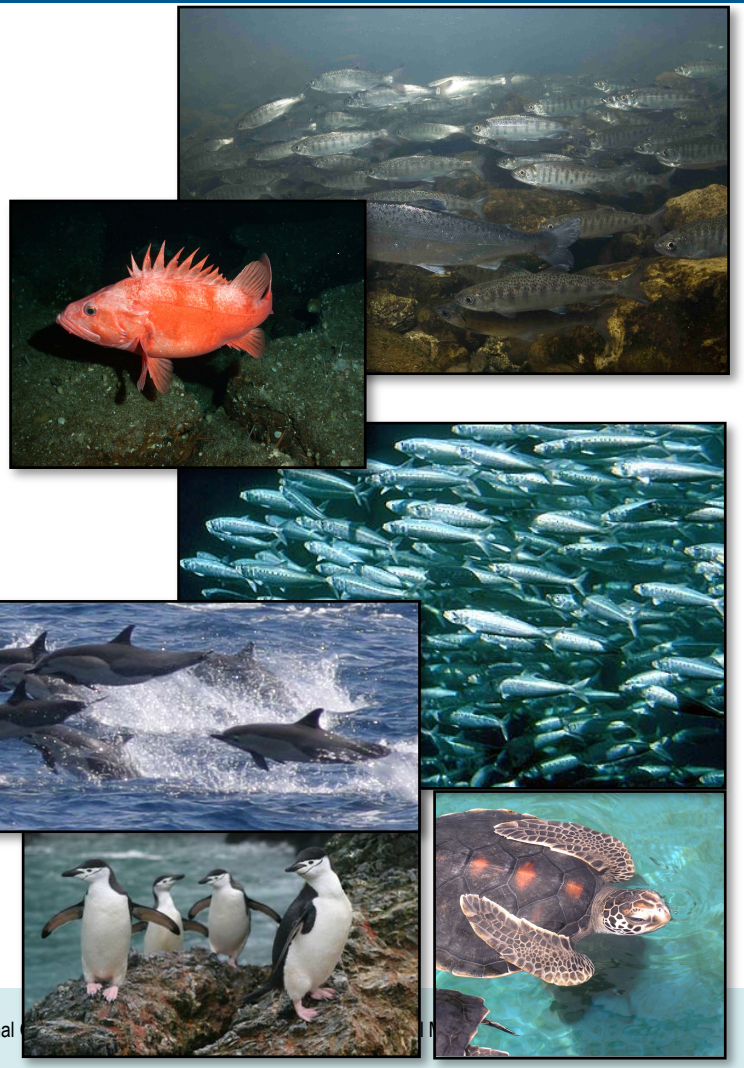
Key Legislative Mandates

- Magnuson-Stevens Fishery Management Reauthorization Act (MSRA)
- Marine Mammal Protection Act (MMPA)
- Endangered Species Act (ESA)
- International Agreements (IATTC, ISC, WCPFC, IWC, AIDCP, IAC-Sea Turtles, CITES, CCAMLR, …)

… and numerous other legislative and regulatory requirements

Key Living Marine Resources

- **Coastal Pelagic Species - MSRA**
  Pacific sardine, anchovy, Pacific mackerel, market squid
- **Highly Migratory Species - MSRA, ISC, IATTC, WCPFC**
  Albacore tuna, bluefin tuna, billfish, sharks
- **Demersal Species - MSRA**
  Rockfishes and other groundfish species (*Sebastes sp.*)
- **Anadromous Species - ESA**
  Chinook salmon, coho salmon, steelhead, green sturgeon
- **Coastal Invertebrates – ESA, MSRA**
  shellfish, deepsea corals
- **Marine Mammals - MMPA, ESA, IWC, AIDCP**
  cetaceans, pinnipeds
- **Marine Turtles – ESA**
  Leatherback, green, loggerhead, olive ridley
- **Antarctic Ecosystem – CCAMLR**
  Krill, fish, fur seals, seabirds



Locations and Geographic Scope

CSU Humboldt State
Cooperative Fisheries
Oceanography Research Team

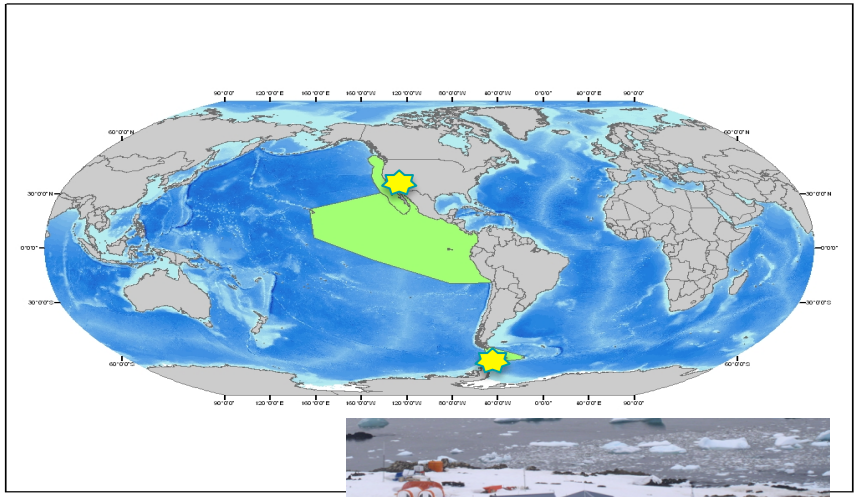
Santa Cruz
Fisheries Ecology Division

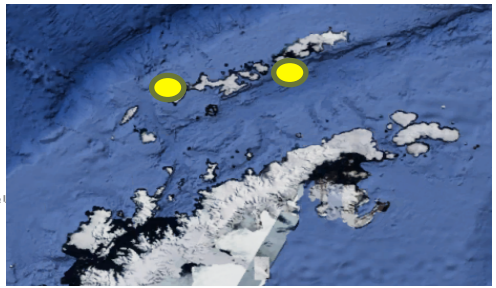
Monterey/SCZ
Environmental Research Division

Granite Canyon
Northbound gray whale survey

Piedras Blancas
Southbound gray whale survey

La Jolla
Operations and Management, Information Technology, Fisheries Resources, Marine Mammal and Turtles, Antarctic Divisions





NOAA Ship *Reuben Lasker*

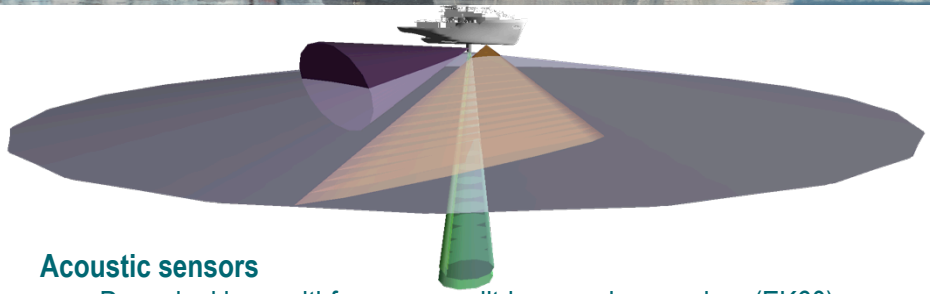
Commissioned in 2014

Mission

- Acoustic and net surveys
- Marine mammal and seabird surveys
- Oceanographic and meteorological sampling
- Habitat mapping
- Sampling technology development

Capabilities

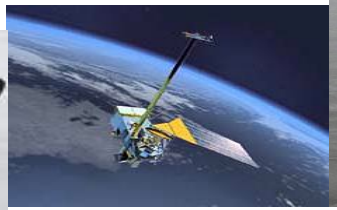
- Fish Laboratory
- Chemistry Laboratory and Dry Laboratory
- Acoustic-Computer Laboratory
- Controlled Environment Room
- All labs interconnected via Scientific Computer System and provided with stable power and UPS

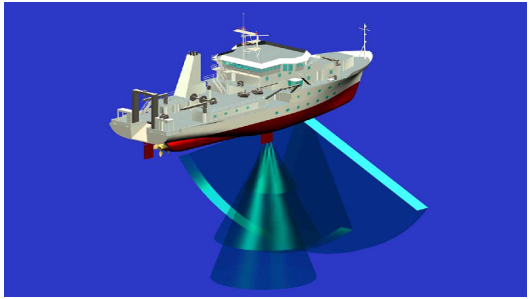


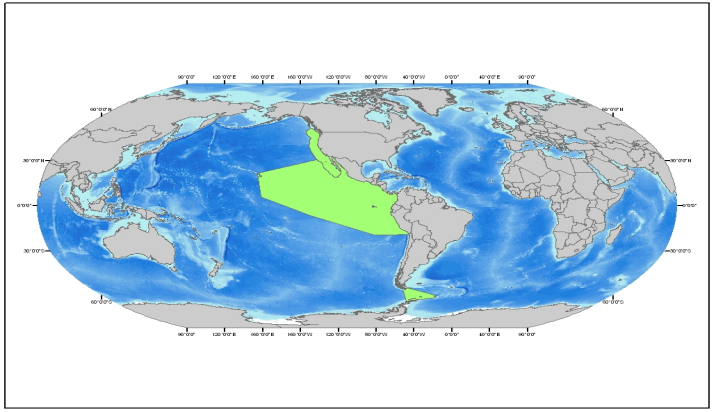
Acoustic sensors

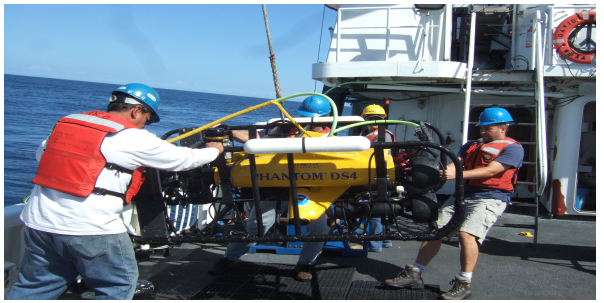
- Down-looking multi-frequency split-beam echosounders (EK60)
- Multi-beam swath echosounder (ME70)
- Omni-directional sonar (SX90)
- Multi-beam imaging sonar (MS70)
- ADCP current profiler
- Additional hydrophones and transceivers for passive sonar, self-noise monitoring, acoustic releases, ROV and AUV tracking.

Center's field and observational efforts







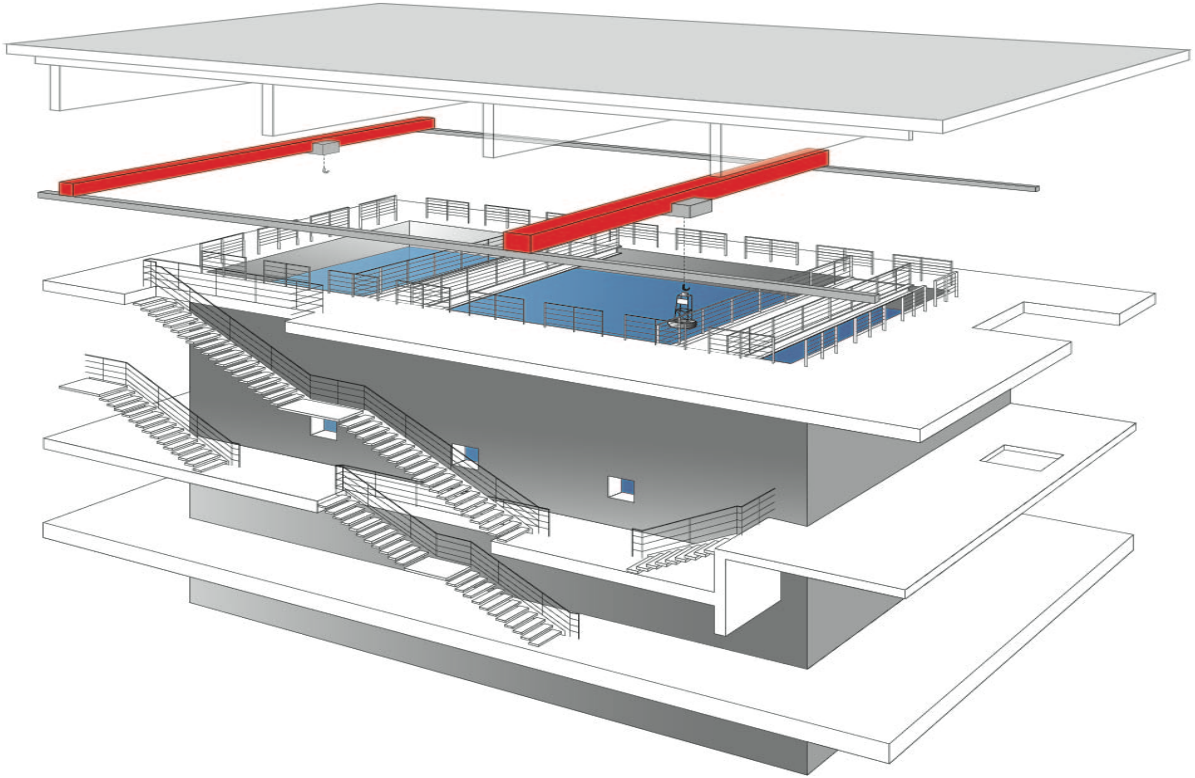


- Fish surveys; acoustic and net surveys
- Marine mammal and seabird surveys
- Oceanographic and meteorological sampling
- Habitat mapping
- Sampling technology development

Ocean Technology Development Test Tank

"An ocean within a building"
SD Union Tribune

- Support for the development of acoustical and optical sensors and platforms for non-invasive surveys
- More efficient use of ship time
- Buoys, gliders and the development of methods to survey remotely



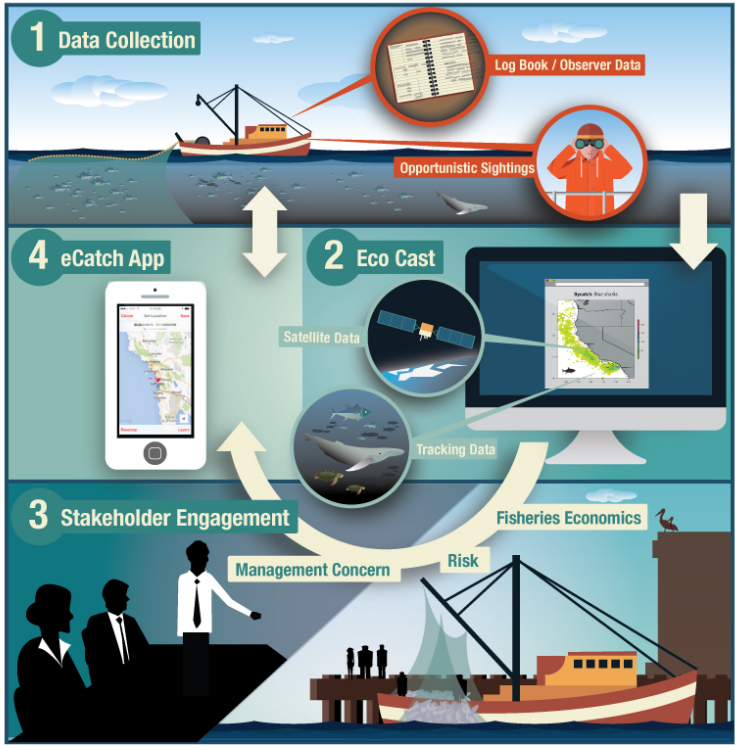
Science in Support of Management

SWFSC and AFSC provide technical expertise and communicate research findings to inform policy and management positions regionally, nationally and internationally, e.g.,

West Coast Regional Office (WCRO) & Office of Protected Resources (NOAA Fisheries)

Recovery Partners (Federal, State, Tribe, NGO)

International Commissions (IWC, AIDCP, IUCN, CIRVA, IAC-ST among others)



Stakeholders and Partners: Leveraging Resources

Scripps Institution of Oceanography, UCSD; University of Washington, Oregon State University, San Diego State University, University of San Diego

Port of San Diego, Puget Sound Partnership, California Department of Fish and Wildlife

NOAA: WCRO, PIRO, AKRO, Office of Protected Resources, NOS, National Marine Sanctuaries

Department of Interior: USFWS, BOEM; Department of Defense: U.S. Navy

U.S. Marine Mammal Commission

Department of Fisheries & Oceans, Canada

Maritime shipping and transportation

Ocean development; renewable energy

Commercial fishing

Recreational ocean users; whale watching

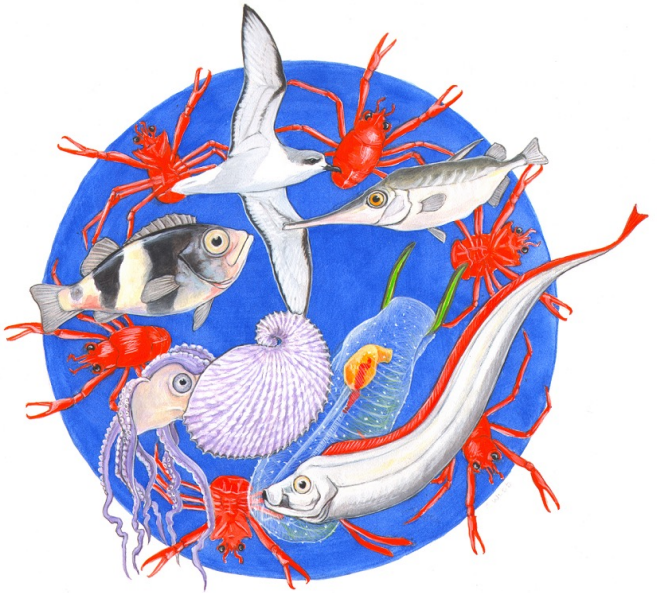
International commissions & conventions (e.g., IATTC, IWC, IUCN, IACST)

The Marine Mammal Center

Hubbs SeaWorld Research Institute

Conservation groups

Public



By the Numbers

Funding:

- SWC: ~$46M NMFS (base + temp) + $7M (external) = $53M

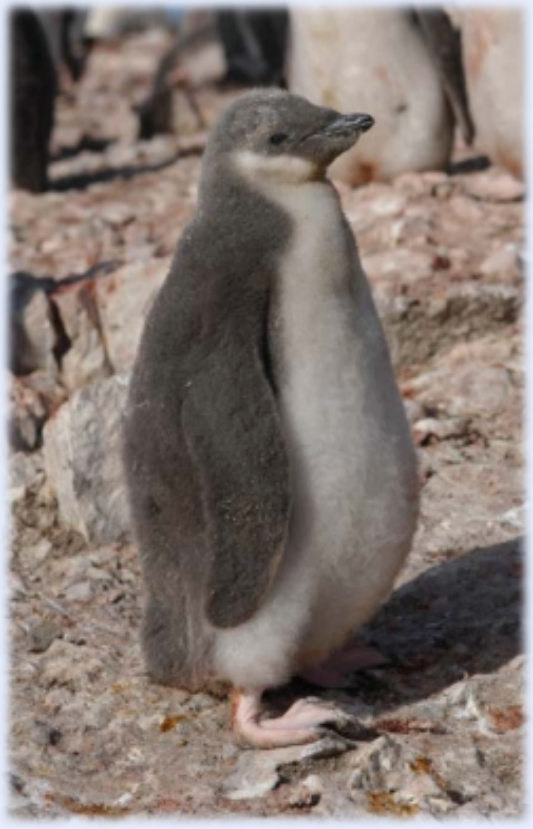
Staff:

- SWC ca. 188 (Federal), 142 (contractors) and 35 (volunteers) in 4 locations

NMFS Funding (millions)

Funding Category	SWC
Fish	16
Mammals and Turtles	8
Pacific Salmon	7
West Coast Observers	0
Temporary funds	8
Other Activities Supporting Fisheries	7

Center Allocation from NMFS: ~46M



Terms of Reference

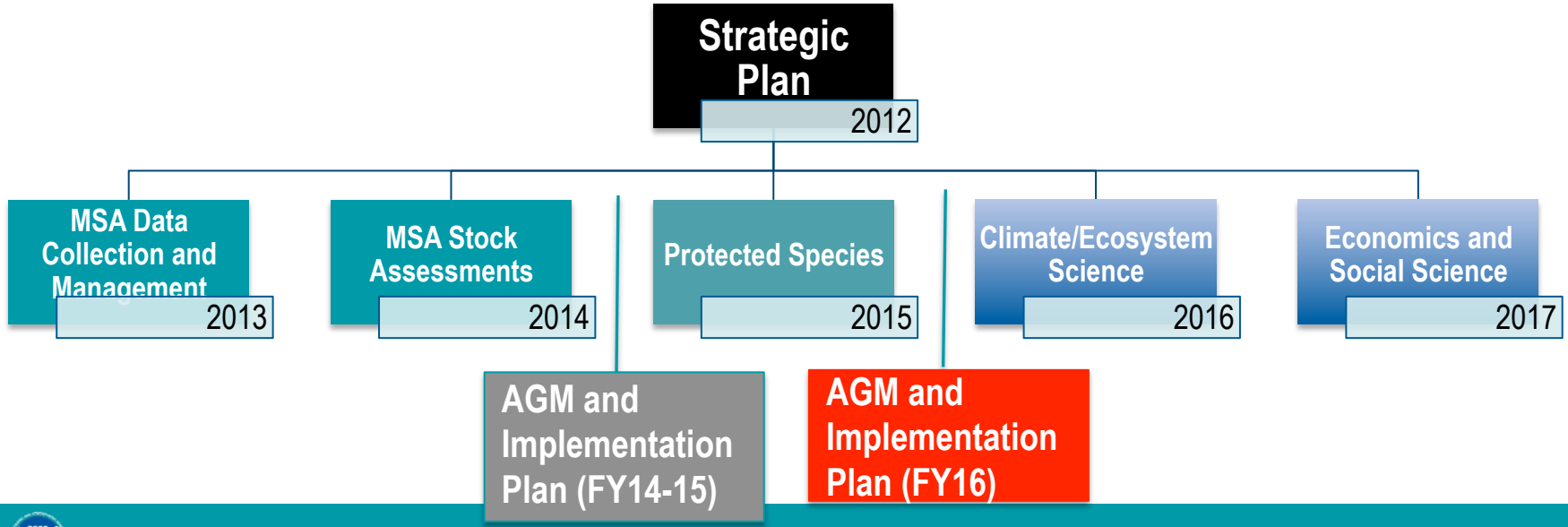
Photo by Octavio Aburto

http://voices.nationalgeographic.com/2012/12/13/behind-the-photo-david-and-goliath/cabopulmo_natgeo2012_octavioaburto/

NOAA Fisheries Strategic Plans

- Provide a five-year outlook of all science and research at the Centers
- Focus on each Center's specific strengths and foremost needs, and best address agency and constituents' needs
- Guide decision-making by providing transparency, a framework for implementation and direction for allocating resources to accomplish goals

- Strategic Science Plan
- External Reviews
- Implementation Plans
- Annual Guidance Memoranda (AGMs)



SWC Director's Guidance for FY15/16 includes:

- CLAWS "Collaborative Large Whale Survey", loggerhead turtles process study, diet sampling of California sea lions
- Complete the 5th winter U.S. AMLR survey in FY16
- Continue the development of the CCIEA
- Increase attention on Central California Coast coho salmon, and Sacramento River winter-run Chinook salmon
- SaKe survey, estimate CCE forage base, PBF assessment

Purpose of Reviews of Science Programs

- Evaluate the quality, relevance, and performance of science and research conducted in NMFS Science Centers and associated laboratories

- Strategically position the Centers and S&T in planning future science and research.

Scope of the Review

- Welcome and Introductions
- SWFSC Ecosystem Science in the Antarctic
- SWFSC Ecosystem Science in the California Current Large Marine Ecosystem (CCLME)
- Modeling
- Collaboration and Communication
- Summary

Questions to Panel

1. Do we have clear ecosystem goals, plans?
2. Do we address the needs of ROs, Councils, Commissions, etc.?
3. Are we in the right direction w/ our Regional Action Plan (WRAP)?
4. Are we collecting and serving data properly?
5. Are we analyzing and modeling ecosystem data properly?
6. Are we integrating it properly into management advice?
7. Is our research properly peer-reviewed?
8. Is it communicated properly to our constituents and public?

Report and Report-Out

- Individual reports from each member of the panel
- Chair provides a summary report
- Draft reports by end of the week (plus ~one week for final version)
- Friday mid-morning report-out by panel
- Center provides response and submits to HQ (one month/six weeks)
- Final reports and Center responses posted publicly in ~3 months
- National synthesis and actions end of calendar year

We look forward to your advice on improving the quality, relevance and performance of ecosystem science.

Thank you!

Questions?

Extra slides

Questions to Panel

Reviewers should review and comment on (from Terms of Reference):

1. Do the Centers/ST have clear goals and objectives for an ecosystem-related science program? Is ecosystem-related science integrated with the other science activities across Divisions within the Center/ST? Are the Center's/ST's ecosystem science and research activities appropriately prioritized and evaluated as part of an overall strategic plan?

2. Do the Center's/ST's ecosystem-related science programs focus on information to address the priority needs of the Regional Offices, other NOAA managers, Fishery Management Councils and Commissions, and other partners that require ecosystem-related information to achieve their mission?

Reviewers' Tasks

3. Has the Center/ST appropriately established a Regional Action Plan to identify the major climate threats to the ecosystem, identify major vulnerabilities of living marine resources with respect to climate, address the core science needs to address impacts from a changing climate, and integrate this information into management advice, congruent with the NOAA Fisheries Climate Science Strategy?

4. What is the status of oceanographic, habitat, climate and ecological data required to fulfill ecosystem-related science needs? Has the Center developed strategies to obtain and manage such data?

Reviewers' Tasks

5. Is the Center appropriately analyzing and modeling ecosystem-level processes? Are cumulative and integrative ecosystem-level analyses being conducted? If not, is there a plan in place to initiate or contribute to the science needed to address cumulative impacts?

6. Is the Center's oceanographic, habitat, climate and ecological advice sufficiently included into living marine resource management advice? Are there suitable mechanisms to determine when such inclusion is warranted?

Reviewers' Tasks

7. Are the Center's/ST's ecosystem-related science programs and products adequately peer-reviewed relative to their purpose and use? If not, has the Center/ST developed a strategy for peer-review?

8. Does the Center/ST appropriately communicate research results and resource needs to conduct ecosystem-related science to various managers, partners, stakeholders and the public?